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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
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09/183,566 10/30/98 CONTAG

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EXAMINER

ZEMAN, R

ART UNIT

PAPER NUMBER

1645

DATE MAILED:

08/16/01

19

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.

09/183,566

Applicant(s)

Contag et al.

Examiner

Robert A. Zeman

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on Jun 11, 2001

2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) 1-24 is/are pending in the application.

4a) Of the above, claim(s) 19-24 is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) 1-18 is/are rejected.

7) ☐ Claim(s) _____ is/are objected to.

8) ☒ Claims 1-24 are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are objected to by the Examiner.
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

13) ☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

a) ☐ All b) ☐ Some* c) ☐ None of:

- ☐ Certified copies of the priority documents have been received.
- ☐ Certified copies of the priority documents have been received in Application No. _____.
- ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

*See the attached detailed Office action for a list of the certified copies not received.

14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

15) ☐ Notice of References Cited (PTO-892)

16) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

17) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s). _____

18) ☐ Interview Summary (PTO-413) Paper No(s). _____

19) ☐ Notice of Informal Patent Application (PTO-152)

20) ☐ Other:

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DETAILED ACTION

The amendment filed 6-11-2001 is acknowledged. Claims 1-7, 10-12 and 18 have been amended. Claims 1-18 are pending and currently under examination. Claim 19-24 remain pending but withdrawn from consideration as drawn to a non-elected invention.

Claim Objections Withdrawn

The objection to claim 1 because it didn't end with a period is withdrawn in light of the amendment thereto.

Claim Rejections Withdrawn

35 USC § 112

The rejection of claim 1 under 35 U.S.C. 112, second paragraph for being rendered vague and indefinite by the use of the phrases "which recognition activates..." and "causes expression of the reporter gene to generate a reporter gene product" is withdrawn in light of the amendment thereto

The rejection of claim 4 under 35 U.S.C. 112, second paragraph for being rendered vague and indefinite by the use of the phrase "reporter gene product is bioluminescence" is withdrawn in light of the amendment thereto.

The rejection of claim 5 under 35 U.S.C. 112, second paragraph for being rendered vague and indefinite by the use of the term "luciferase" is withdrawn in light of the amendment thereto.

The rejection of claim 7 under 35 U.S.C. 112, second paragraph for having in sufficient

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antecedent basis for the limitation "intracellular signal transforming **element**" is withdrawn in light of the amendment thereto.

The rejection of claim 11 under 35 U.S.C. 112, second paragraph for being rendered vague and indefinite by the use of the phrase "or fragment thereof". It is unclear what constitutes a "fragment" is withdrawn in light of the amendment thereto.

Claim Rejections Maintained

35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(f) or (g) prior art under 35 U.S.C. 103(a).

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The rejection of claims 1-18 under 35 U.S.C. 103(a) as being unpatentable over Contag et al. (U.S. Patent 5,650,135, IDS-7) and Georgiou et al. (1997 Nature Biotechnology, Vol. 15, pages 29-34, IDS-7) in view of Kasahara et al. (Journal of Bacteriology, 1991 Vol. 173, No. 2, pages 6760-6765, IDS-7) is maintained for reasons of record.

Applicant argues:

1. Examiner has not provided motivation for combining the teachings of the cited references.
2. Contag et al. does not teach or suggest biodetectors constructed according to the teachings of the instant invention.
3. Georgiou et al. on teaches the display of foreign proteins and peptides on the surface of the microorganisms. Said reference teaches the use of FACS to identify of said proteins and peptides. Said reference also teaches the use of said surface displayed proteins and peptides in the production of vaccines.
4. Georgiou et al. does not teach or suggest biodetectors constructed according to the teachings of the instant invention.
5. Kashara et al. provides a molecular analysis of the *Salmonella typhinurium* phoN gene and generally describes the phoP/phoQ transduction system.
6. Kashara et al. does not teach or suggest any modifications that would alter the ligand-specific binding domain of the phoP/phoQ system.
7. Examiner has relied on reconstructive hindsight to formulate the aforementioned rejection.

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Applicant's arguments have been fully considered and are deemed to be non-persuasive.

- In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, Applicant's attention is directed to the bridging paragraph between pages 5 and 6 of the previous Office action. As previously stated, "Since the use of various regulatory promoters (operons) would be known by one of skill in the art, it would have been obvious to said artisan to use the phoP-phoQ operon disclosed by Kasahara et al. and the heterologous scFv disclosed by Georgiou et al. **in order to take advantage of the increase in specificity, diversity, and ease of production of the resulting biodetector.**"
- With regard to Applicant's assertion that neither Contag et al. nor Georgiou et al. disclose a biodetector constructed in accordance with the teachings of the present invention, Applicant is reminded that the aforementioned rejection is based on the combination of the cited references. Contag et al. disclose biocompatible compound consisting of an entity such as a bacterial cell and a light generating moiety such as luciferase (see

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column 2 lines 60-61 to column 3, lines 1-3). Contag et al further disclose that said moiety can be expressed via *in situ* synthesis in the entity (i.e. expression of a heterologous bioluminescent protein in a transformed cell or the *in situ* activatable promoter controlled expression of a bioluminescent protein. (see column 3, lines 11-14, column 4, lines 18-21 and column 7, 31-39). Contag et al. also disclose luciferase vector constructs that can be adapted for use in transforming a variety of host cells including bacteria (see column 10, 60-63). Finally, Contag et al disclose the use of antibodies and antibody fragments to confer specificity to the compound. Additionally, Contag et al. disclose "a construct including a gene encoding a light-generating protein under the control of an inducible promoter. Promoter induction events include the administration of a substance which directly activates the promoter (signal transduction)-- see column 4, lines 20-23. As stated previously, Contag et al. differs from the claimed invention in that they do not specifically disclose the use of the *phoP-phoQ* operon as the regulatory system nor do they explicitly disclose the recombinant expression of the antibodies or antibody fragments on the bacterial surfaces. Kasahara et al. disclose the *phoP-phoQ* operon and its uses. Kasahara et al. further disclose the sequences of said operon and its use in operon fusions (See Figure 2 and page 497). Georgiou et al. disclose the methods for the recombinant expression of heterologous proteins on the surface of bacteria (both gram positive and gram negative) including scFv (see page 32-33 and Table 1).

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- In response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971).

Consequently, given the disclosures of the cited references and the knowledge within the level of ordinary skill at the time the invention was made, it would have been obvious to the skilled artisan to use the phoP-phoQ operon disclosed by Kasahara et al. and the heterologous scFv disclosed by Georgiou et al. in the construct of Contag et al. in order to take advantage of the increase in specificity, diversity, and ease of production of the resulting biodetector. Additionally, by varying the scFv, one could easily create a library of biodetectors as taught by Georgiou et al.

Conclusion

No claim is allowed.

Applicant is requested to cancel non-elected pending claims in any response to this final action.


THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

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A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Robert A. Zeman whose telephone number is (703) 308-7991. The examiner can be reached between the hours of 7:30 am and 4:00 pm Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, Donna Wortman, Primary Examiner can be reached at (703) 308-1032 or the examiner's supervisor, Lynette Smith, can be reached at (703)308-3909.



DONNA WORTMAN
PRIMARY EXAMINER

Robert A. Zeman

August 14, 2001